Fig. 4 depicts transmission losses of the optical fiber fabricated as described above. This optical fiber did not generate the transmission loss peak in the waveband of 1.36 to 1.43 μm.

Furthermore, in one embodiment of the method of fabricating the optical fiber, the above-mentioned optical fiber is allowed to stand at normal temperatures under a atmospheric environment containing about 10% of D_2 (deuterium gas) for one hour. Then, the method of fabricating the optical fiber of the embodiment is characterized in that the transmission loss peak in the waveband of 1.36 to 1.43 μmm can be suppressed by applying the D_2 treatment even though the optical fiber having been applied to the D_2 treatment is exposed in a hydrogen atmosphere.

A characteristic line a shown in Fig. 5 is a result showing that the D_2 treated optical fiber was allowed to stand in a nitrogen atmosphere containing hydrogen of about 1% at room temperature for four days and then transmission loss spectra were measured. As apparent from the characteristic line a shown in Fig. 5, the D_2 treated optical fiber did not generate the transmission loss peak in the waveband of 1.36 to 1.43 μm. On the other hand, a characteristic line b shown in Fig. 5 is a result showing that the D_2 untreated optical fiber was allowed to stand in a hydrogen atmosphere for four days under the same conditions. As indicated by the characteristic line b shown

in Fig. 5, the increase in the transmission losses were noticed in the waveband of 1.36 to 1.43 μm in the D_2-untreated optical fiber.

In addition, the inventor performed the D_2 treatment based on the following new evidences. That is, in the optical fiber obtained by applying the method of fabricating the optical fiber preform of one embodiment, the defects of peroxide radicals generated in fabrication, for example, are substituted by OD groups. Then, the optical fiber having been D_2 treated can prevent an increase in OH groups of the optical fiber even though it is used under the high-energy radiation environment or H_2 atmosphere.

Furthermore, the light absorption peak of the OD groups described above exist at 1.26 μm and 1.66 μm, which is not in the waveband to be used in the optical communication (1.3 to 1.6 μm, for example). On this account, the transmission losses in the waveband of 1.36 to 1.43 μm are not increased in the D_2 treated optical fiber. Moreover, the concentration, temperature, pressure, and period of time of D_2 in the D_2 treatment are not limited to the conditions described above.

However, in the above-mentioned optical fiber usable in a wide wavelength range, the zero dispersion wavelength is preferably positioned almost in the middle of the wavelength range to be used (about 1.3 to 1.6 μm), nearly at 1.4 to 1.5 μm, for example. Then, the inventor set the zero dispersion

wavelength of the optical fiber fabricated by the method of fabricating the optical fiber of one embodiment as described above. Consequently, the optical fiber obtained by the fabrication method described above could obtain excellent transmission characteristics in a wavelength range of 1280 to 1600 nm.